

***B.Tech Degree V Semester Examination in  
Marine Engineering December 2011***

**MRE 502 MARINE BOILER AND STEAM ENGINEERING**

Time : 3 Hours

Maximum Marks : 100

- I. Sketch and describe a smoke tube boiler and explain the advantages of water tube boilers over smoke tube boilers. (20)
- OR**
- II. Sketch and describe a water tube boiler with super heater, air pre-heater etc. (20)
- III. Sketch and describe a Lamont exhaust gas boiler and show with a line diagram how the exhaust gas boiler is connected to the auxiliary boiler in a diesel ship. (20)
- OR**
- IV. Sketch and describe a composite boiler and explain why it is called a composite boiler. (20)
- V. Sketch and describe a high lift safety valve and specify the materials used for different parts of the safety valve. Explain the importance of safety valve drain. (20)
- OR**
- VI. Sketch and describe different types of guage glasses and show how they are attached to boiler shell. Explain how to blow down a guage glass. (20)
- VII. Explain how to open up a boiler for inspection and survey after blowing down. How the hydraulic test is carried out on a boiler and what is the test pressure and duration of pressure test. (20)
- OR**
- VIII. Sketch and describe different types of boiler fuel oil atomizers and explain how fuel/air ratio and viscosity are controlled in boiler control system. (20)
- IX. (a) What are the advantages of steam turbines over reciprocating steam engines? (5)  
(b) Describe the main parts of a turbine with a simple sketch. Explain the working of impulse and reaction turbines with pressure velocity diagrams. What is a velocity compounded stage? (15)
- OR**
- X. Sketch and describe a steam turbine condenser and explain with a line diagram of steam cycle showing boiler, turbines, condenser, feed pump etc. (20)